Red Imported Fire Ant
Interim Plan
March 1999

INTERIM PLAN:

The Red Imported Fire Ant (RIFA) is an aggressive, exotic insect that was introduced into the southern United States in the late 1920's and has since spread to 11 southeastern states. In those states, the RIFA has had adverse impacts on human health, agriculture, the natural environment, and human activities.

The California Department of Food and Agriculture (CDFA) has prepared and submitted a proposed long-term plan for dealing with the RIFA infestations in Southern California. In formulating the long-term plan, CDFA met with, and solicited input from, other state agencies, the Audubon Society, the Nature Conservancy, the Sierra Club, agricultural interests, local officials in Orange County, the University of California, the Texas Department of Agriculture, the Texas Agricultural Extension Service, and the Red Imported Fire Ant Science Advisory Panel (RIFASAP) which is comprised of representatives from Florida, Mississippi, and Texas.

With the advent of warmer weather in Southern California, the CDFA is concerned that the RIFA infestations will become more active and that local spread will occur as the ants begin swarming. Therefore, the CDFA is proposing to implement an interim RIFA eradication/control plan. An interim plan will allow local entities, in partnership with the Department, to immediately begin eradication/control activities that will limit the local spread of the RIFA.

Timeline

If approved, the treatments of the known infested areas will begin during the first week of April, weather permitting. Currently, treatments are planned to begin in April and continue through June 1999. At that time, all treatment activities will be turned over to local entities.

CURRENT SITUATION:

The RIFA in Southern California was discovered in October 1998, when a nursery in Nevada found RIFA in a shipment of nursery stock from a nursery in the Trabuco Canyon area of Orange County. Subsequent surveys of the nursery and the surrounding residential and commercial retail community revealed that the RIFA was generally infesting the entire Trabuco Canyon area. Further surveys have found infestations of RIFA, at varying levels of infestation, in 26 localities in Orange County, the Cities of Cerritos and Hawaiian Gardens in Los Angeles County, and eight locations in Riverside County (Attachment I and II). Proclamations of Eradication have been issued for 569 square miles of Orange County, 45 square miles of Los Angeles County, and 175 square miles of Riverside County.

Prior to the Southern California discovery, RIFA had been found in five almond orchards in three San Joaquin Valley counties. In conjunction with the local agricultural commissioners, these orchards are currently under eradication/control treatments. These were small, isolated infestations where the Department had been conducting operations for the past 24 months. Limited RIFA surveys are currently taking place to further delimit infestations in the counties involved and within suspect counties that may have received RIFA infested commodities (i.e., RIFA infested bee

shipments, etc.).

OBJECTIVE:

To limit the local spread of RIFA.

To provide training and familiarization to local governmental entities, other state agencies, and interested parties as to how to conduct eradication/control activities for the RIFA. Past July 1, local entities will assume responsibility for the treatment aspects of the long-term RIFA action plan.

ELEMENTS:

Lead Agency

The CDFA will be the lead agency and will work in cooperation with and provide assistance to local agricultural commissioners and other affected entities in implementing this interim plan. Prior to implementation of this plan, the CDFA will work with affected cities and conduct public meetings.

Intergovernmental Coordination

Local Government Level: The CDFA will continue to provide the leadership in working with other governmental agencies to formulate plans for those agencies to deal with the RIFA in their jurisdictions. Local agencies that will assume responsibility for RIFA eradication/control on lands for which they have responsibility will be invited to participate in the RIFA interim program for training and orientation.

State and Federal Level: CDFA will coordinate as appropriate.

Treatment

The CDFA will assist local agencies to initiate treatments within the Southern California eradication/control areas. Treatment activities will be dependent on acquiring appropriate registrations for use of RIFA insecticides. The CDFA will work with California Environmental Protection Agency, Department of Pesticide Regulation (CalEPA, DPR) to pursue the registration of pesticides that can be used for the numerous RIFA treatment scenarios present in the state, such as urban residential, greenbelt, parks, open space, golf courses, environmentally sensitive areas, agricultural production areas, and others. No treatments will be initiated on private property without written consent of the owner. A treatment and local survey protocol is attached.

Environmental Impact

The CDFA would interact with interested/affected stakeholders to mitigate environmental impact associated with this interim plan. An environmental monitoring protocol is a part of this document and will be implemented prior to beginning any treatment activities.

Public Outreach and Education

The CDFA will continue its present course as the lead agency and will coordinate all aspects of the program with the public, the affected industries, and state and local government entities. The Department will initiate the development of technical information, disseminate public health and RIFA management literature, and act as a clearinghouse for information to the public and press.

Detection and Quarantine

The CDFA will continue with the current detection and quarantine activities. The overall objective will be to follow up known leads of RIFA infested commodity movement into California. CDFA will continue to work closely with the nursery industry, local communities, and other interested stakeholders.

Red Imported Fire Ant
Treatment and Local Survey Protocol

TREATMENT PROTOCOL

Red Imported Fire Ant (RIFA) chemical treatment activities are necessary for the eradication/control of this pest. There are no biological control agents currently available that have the efficacy necessary to achieve control or eradication. This treatment protocol has been developed for use by the California Department of Food and Agriculture (CDFA) along with other participating state and federal agencies, agricultural commissioners, other county agencies, and municipalities.

The CDFA does not expect that there will be significant environmental or health effects, as a result of applications of baits used against the RIFA. The pesticides proposed for use are baits and are very specific to the target insects. The amount of active ingredients are typically less than one percent. Additionally, the Department of Pesticide Regulation (DPR) has provided an interim evaluation of the materials which are proposed for use, and found that when used according to label instructions, there will be no significant risk to people or the environment. In the review, the DPR found that these chemicals are not mobile in soil, not persistent in the environment, and therefore unlikely to move to water bodies.

Treatment occurs when a sample of *Solenopsis invicta* (Red Imported Fire Ant) has been confirmed by a reputable diagnostics group, such as the Plant Pest Diagnostics Branch of CDFA, or qualified personnel from county agricultural commissioners' offices.

An exact identification of the detection site is necessary. This can be a street address, landmark, or site determined by G.P.S. (Global Positioning System).

For optimal results, all mounds within the treatment area must be treated. Prior to initiating treatments, a thorough survey of the area must be conducted and detection sites recorded as noted above. Factors affecting determination of the treatment area size include the following: disposition of find site (private property, nursery, business park, etc.), method and history of introduction (if known), proximity of site to natural barriers such as dry areas, water bodies, etc., and man-made barriers.

Granular bait treatments using a metabolic inhibitor or Insect Growth Regulator (IGR) are the treatment methods of choice for RIFA. These materials can be distributed by broadcast over entire areas or small applications can be made to individual mounds. Broadcast spreaders range from small hand-held units to larger hopper units. If reproductive adults are found, a soil drench of mixed pesticide may be applied to the colony to quickly kill the reproductives and prevent local spread.

In most areas of Central and Southern California, both a metabolic inhibitor, such as Amdro (hydramethylnon), and an IGR, such as Distance (pyriproxyfen) will be used to treat RIFA colonies. If the metabolic inhibitor is used first, the IGR application will follow at least six weeks later. If the IGR is used first, the metabolic inhibitor will follow within one to two weeks. The local conditions will dictate which material is used first. Treatment should be initiated only when soil temperature is between 65 and 90 degrees, and the treatment area is free of rain or irrigation for a minimum of 36 hours. RIFA acceptance of bait materials should be tested by placing a small amount of bait near a known colony where activity has been recently observed. If the material is readily retrieved by foraging RIFA, then treatment should occur on that day.

An efficacy survey of the treated area should be performed no sooner than six weeks after the IGR application. Survey should include both visual and baiting techniques. Baiting procedures are described in following paragraphs.

The following precautions will be taken during any treatment program:

$ All pesticides are used according to registration and label directions.

$ Obtain all necessary permits.

$ All employees working with pesticides receive safety training, use appropriate safety equipment, and are under medical surveillance.

NON-PESTICIDE TREATMENT OPTIONS

Homeowners and other local entities may choose a non-pesticidal option of hot water. Known RIFA mounds can be treated using scalding hot water. The success rate of complete eradication/control using a single hot water treatment is about 60 percent. Each mound should receive at least two gallons of hot water. The water needs to reach all parts of the colony, especially the queen and brood chambers. A single treatment may not be successful; daily treatments over five to 10 days may be necessary. Caution must be exercised, as the applicator could be injured, as well as surrounding plants. If neighboring areas have RIFA, re-infestation will occur.

ERADICATION/CONTROL PROGRAM SURVEY PROTOCOL

Pre-Treatment Survey Protocol

A pre-treatment survey can consist of visual and baiting techniques. A minimal survey would be to look at areas that have water on a consistent basis, such as around the base of trees, next to water bodies (the interface between a swimming pool concrete area and turf, for example), and looking for evidence of soil up-welling or mound building. RIFA mounds are usually found in open, sunny areas such as lawns, pastures, or fields. New RIFA colonies do not make a conspicuous mound for several months. Up-welling can be seen before a mound is established. The soil brought to the surface is of a fine texture, not coarse as is the case with gopher mounds (although RIFA can establish a colony in a gopher mound). On a warm, sunny day, ant foraging activity can be observed, and the foraging trail can be traced back to the colony. Urban areas, green belts, parks, golf courses, and other areas that have a year around water source are likely areas for establishment of RIFA.

A more intensive survey would include placing baits to attract foragers, retrieving them at an interval from one hour to overnight. The most effective bait used for California detection efforts, to date, has been a well known canned luncheon meat product cut in small portions (approximately one half to one inch square), and placed in an area to be surveyed at intervals of 50 feet or less. The baits can be placed in small, perforated plastic containers and secured by a wire inserted through the container and into the soil. If the survey is large, small flags can be used to mark the bait locations. Baiting activities are not effective if soil temperature is below approximately 65 degrees, or if standing water is present. If conditions are ideal such as a dry, clear, calm day of 70 to 75 degrees, baits can be retrieved in one to two hours. Less ideal conditions may require the baits to remain overnight. In very warm weather, RIFA workers forage in the evening and night. Do not place baits where small

children may be active. Baits can also be lost to foragers, such as dogs, coyotes, crows, etc.

If the area treated has been adequately surveyed before treatment, most colonies will have been identified, and follow-up survey can consist of a visual survey for colony activity. This can occur the following day after treatment with hot water, or at six weeks when a pesticide containing metabolic or growth regulators is used. Follow-up survey should be done in the above mentioned conditions regarding temperature, wind speed, and moisture. To be reasonably sure the area is free of RIFA, surveys should be performed in the spring, summer, and fall for two years following treatment. Bait surveys should be conducted for a higher level of confidence.

MONITORING PROTOCOL ON TREATED RIFA COLONIES

The goal of a monitoring program for RIFA is to determine whether or not the treated colonies are dying. Accordingly, the following protocol is established:

Visual Survey Protocol

Identify up to 50 colonies per treated area (Trabuco Canyon, Cypress, etc.) and follow the colonies for six to eight weeks after treatment. Within a predetermined time frame, morning or afternoon, and within similar daytime temperatures, visually determine worker numbers for three to five minutes and compare to previous such counts to determine if worker numbers are declining. The length of time to follow the colonies after treatment is dependent upon the time of the year and will be shorter in the summer and longer in the winter. If the colonies have not died out, follow pesticide label instructions regarding retreatment schedules for the expected results. When workers are no longer found, proceed with baiting survey.

Baiting Survey Protocol

The baiting shall be done when air temperatures are between 70 and 90 degrees Fahrenheit. Baits are placed for only two to three hours and then retrieved, noting the presence or absence of RIFA. In orchards, bait every other tree in every other row. In golf courses, parks, median strips, etc., bait at the south base of trees and other sites where colonies were found in the past. The precise density of baits will be dependent on the area to be baited, but one bait every 50 to 100 feet may be a useful density. In urban areas use one bait per property, if appropriate, and place the baits where colonies were found in the past such as bases of trees, in raised flower beds, etc. If RIFA are found, re-treat and repeat monitoring protocol. If no RIFA are found, return and repeat the baiting protocol the next year.

This protocol does not contain an exact bait density but relies on the detection staff to exercise their judgement in each situation.

AREAS OF RESPONSIBILITY

Treatment activities for RIFA will be a cooperative effort between city, county, state, and federal agencies. All groups and agencies will report all treatment activities to the Pest Detection/Emergency Projects Branch of Plant Health and Pest Prevention Services, California Department of Food and Agriculture. This report should include agency name, date of treatment, treatment number (first, second, third, etc.), name and amount of pesticide used, size of area treated, address, city, and county.

The CDFA will serve in an advisory capacity. This will include the coordination of research activities done by in-state groups such as the University of California, and out-of-state experts such as members of the scientific advisory panel for RIFA. Research findings and the most current treatment information will be available to participating agencies and property owners. Starting April 1, 1999, CDFA will also provide training to participating state, county, and city agencies involved in survey and treatment activities.

California Environmental Protection Agency
Department of Pesticide Regulation
Environmental Monitoring and Pest Management
830 K Street
Sacramento, California 95814-5624

MONITORING GROUND APPLICATIONS OF SELECTED INSECTICIDES IN FIRE ANT TREATMENT AREAS

INTRODUCTION

The California Department of Food and Agriculture (CDFA) is proposing that pyriproxyfen, fenoxycarb, avermectin, and hydramethylnon be used to eradicate/control fire ant infestations in California. The Environmental Hazards Assessment Program (EHAP) of the Department of Pesticide Regulation (DPR) will provide monitoring of these treatments to provide information on the concentrations of the chemicals in air, surface, water, turf, soil, and storm water runoff. Additionally, dissipation of the insecticides for turf and soil, and their toxicity to aquatic organisms will be determined. This proposed monitoring plan follows the general models in previous studies (Ando et al. 1993, and Segawa and Powell 1989).

This proposed monitoring plan will be followed for each application event. More than one application event may be monitored; the total number of events to be monitored will be decided when the extent of the treatment program is known. The total numbers of samples collected will be determined once this information is available.

MONITORING PLAN

Turf and surface soil will be collected from each of 15 sites in the treatment area approximately 12 hours after application to determine the maximum concentrations in treated areas. At five of the 15 sites, samples will be collected over eight additional sampling dates to determine dissipation rates of insecticides in turf and soil. Half-lives will be estimated using standard statistical methods. Chemical analyses of turf samples for dislodgeable and internal residues will be performed.

Air samples will be collected at five sites to measure ambient insecticide concentrations. The samples will be collected for a 24-hour period before application (background), during application, 24 hours post-application, and a final 24-hour sample from 24 to 48 hours after application.

Natural waterways located within the treatment area will be monitored prior to the first application and immediately following application to determine insecticide concentrations. Additionally, storm runoff sites, if accessible, will be monitored during rain runoff events to determine concentrations due to wash off from exposed surfaces. During the first rain event after the initial application, samples will be collected at points of discharge and/or at areas of concern for aquatic organisms. Water collected from each site will be analyzed for insecticide concentration and toxicity to selected sensitive aquatic species. The number and frequency of samples collected will depend on intensity and duration of the runoff event. When practical, automatic samplers will be used to collect runoff water samples.

The Department of Fish and Game (DFG) will assist in the selection of sites and species selected for testing. The species selected will depend upon the origin of the water samples. Water quality parameters which include alkalinity, hardness, electrical conductivity, ammonia, pH, dissolved

oxygen, and water temperature will also be measured.

Chemical analysis will be performed by the CDFA=s Center for Analytical Chemistry. Methods are under development and quality control measures are described in Segawa (1995). DFG=s Aquatic Toxicology Laboratory will perform aquatic toxicity tests on rain runoff samples and measure totals of alkalinity, hardness, and ammonia.

DATA ANALYSIS

Concentrations for dislodgeable and internal residues of insecticides in turf/thatch will be reported as milligrams per square meter (mg/m5) and parts per million (ppm) wet weight and dry weight; soil concentrations will be reported as a ppm and mg/m5 on a wet weight and dry weight basis. Concentrations of insecticides on air will be reported as both micrograms per cubic meter (μg/m;) and parts per trillion (ppt), and water concentrations will be reported as both micrograms per liter (μg/L) and parts per billion (ppb). When sample size permits, means, percentiles, and frequency histograms will be presented. Toxicity data will be presented in percent survival. Water concentrations will be compared with toxicity data to aid in the interpretation of toxicity test results.

REFERENCES

Ando, C., J. Leyva, and C. Gana. 1993. Monitoring Diazinon in the Mediterranean Fruit Fly Eradication Soil Treatment Program, Los Angeles County, 1992. California-EPA/Dept. of Pesticide Regulation. Environmental Hazards Assessment Program. EH 93-01.

Segawa, R., and S.J. Powell. 1989. Monitoring the Pesticide Treatments of the Japanese Beetle Eradication Project, Sacramento County, California, 1983-1986, Volume II: Isofenphos. California Dept. of Food and Agriculture. Environmental Hazards Assessment Program. EH 89-03

Segawa, P. 1995. Chemistry Laboratory Quality Control. California-EPA/Dept. of Pesticide Regulation. Environmental Hazards Assessment Program. SOP QAQ001.00.

CITIES CURRENTLY INVOLVED WITH RED IMPORTED FIRE ANT

ORANGE COUNTY

Anaheim
Buena Park
Costa Mesa
Cypress
Fountain Valley
Fullerton
Garden Grove
Huntington Beach
Irvine
La Palma
Laguna Beach
Laguna Niguel
Los Alamitos
Mission Viejo
Newport Beach
Orange
Placentia
Portola Hills Area
Rancho Santa Margarita Area
San Juan Capistrano
Santa Ana
Stanton
Trabuco Canyon Area
Tustin
Villa Park
Westminster

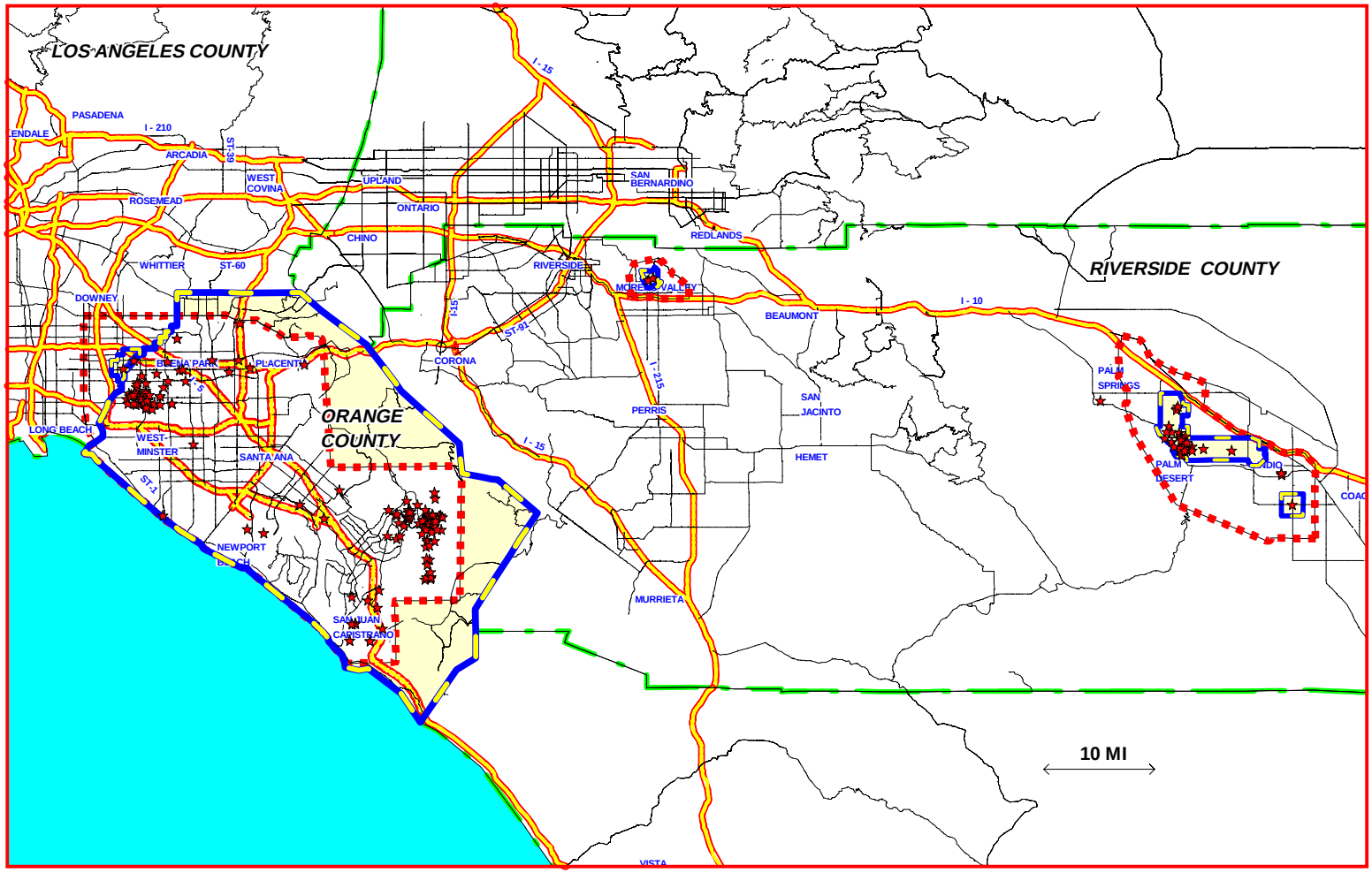
RIVERSIDE COUNTY

Bermuda Dunes Area
Indian Wells
Indio
La Quinta
Moreno Valley
Palm Desert
Palm Springs
Rancho Mirage

LOS ANGELES COUNTY

Cerritos
Hawaiian Gardens

RED IMPORTED FIRE ANT
ORANGE - RIVERSIDE COUNTIES
1998/99



CDFA

PEST DETECTION

★ RIFA SITE

KNOWN RIFA AREA

QUARANTINE BOUNDARY

03/08/99